

**WHAT IS CLAIMED IS:**

1. A network architecture for providing a packet voice call over a packet-based network to a circuit network terminal supporting wireless communication over a circuit-based network, comprising:

a radio access network (RAN) for providing a call service to the circuit network terminal;

a mediation gateway connected to the RAN via a predetermined signaling interface of the circuit-based network, for performing location registration, authorization, and mobility management to provide a packet voice call service to the circuit network terminal and making the circuit network terminal recognized as a packet network terminal in the packet-based network by performing IP registration for the circuit network terminal; and

an access gateway connected to the mediation gateway via a predetermined signaling interface, for providing predetermined traffic interfacing upon request from the mediation gateway, and connected to the RAN, for transmitting voice traffic from the circuit network terminal to a terminal of a called party via the packet-based network.

2. The network architecture of claim 1, wherein the mediation gateway comprises:

a circuit network supporter for receiving information about a user profile, service profile, and service quality class of the circuit network terminal from the RAN via the predetermined signaling interface; and

a packet network supporter for converting the user profile, service profile, and service quality class information received from the circuit network supporter to a signal for SIP (Session Initiation Protocol) registration, assignment, and call setup processing, and transmitting the converted signal to the packet-based network.

3. The network architecture of claim 2, wherein the circuit network supporter supports IOS A1 interfacing to connect to the RAN and IS-41 interfacing to connect to a home location register (HLR), and manages the mobility of the circuit network terminal.

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4. The network architecture of claim 3, wherein the IOS A1 interface is one of an SS7 interface or an ATM interface.

5. The network architecture of claim 2, wherein the packet network supporter performs authorization and billing for the circuit network terminal over the packet-based network.

6. The network architecture of claim 1, wherein the access gateway terminates a traffic packet from the packet-based network and interfaces the terminated traffic packet to the circuit network on a radio traffic channel.

7. The network architecture of claim 1, further comprising a session control manager connected to the mediation gateway via a predetermined signaling interface, for controlling a session connection for the packet voice call service of the circuit network terminal upon request from the mediation gateway.

8. A registration method for providing a packet voice call service over a packet-based network to a circuit network terminal supporting wireless communication over a circuit-based network, comprising the steps of:

receiving a registration request from the circuit network terminal through a radio access network (RAN) via a circuit-based network interface;

updating subscriber information of the circuit network terminal and registering a location of the circuit network terminal in response to the registration request;

requesting IP registration of the circuit network terminal to the packet-

based network; and

transmitting a registration result to the circuit network terminal via the RAN upon receipt of the registration result from the packet-based network.

5           9.       A call origination method for providing a packet voice call service over a packet-based network to a circuit network terminal supporting wireless communication over a circuit-based network, comprising the steps of:

              receiving a packet voice call origination request at a mediation gateway from the circuit network terminal through a radio access network (RAN) via a  
10 circuit-based network interface;

              transmitting IP protocol information generated for the circuit network terminal from the mediation gateway to an access gateway; and

              connecting the circuit network terminal to the packet-based network using the IP protocol information and providing the packet voice call service to  
15 the circuit network terminal by the access gateway.

              10.     A call termination method for providing a packet voice call service over a packet-based network to a circuit network terminal supporting wireless communication over a circuit-based network, comprising the steps of:

20           requesting a call termination at the circuit network terminal to a mediation gateway by the packet-based network;

              paging the circuit network terminal through a radio access network (RAN) via a circuit-based network interface by the mediation gateway;

              transmitting IP protocol information generated for the circuit network  
25 terminal from the mediation gateway to an access gateway upon receipt of a response for the paging; and

              connecting the circuit network terminal to the packet-based network using the IP protocol information and providing the packet voice call service to the circuit network terminal by the access gateway.

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